CLAIMS:

1. An apparatus, comprising

a lens having a light entrance end forming a recess;

a heat sink having an end portion facing the recess; and

a light source positioned to transmit light via the recess into the lens in thermal communication with the heat sink;

wherein heat generated by the light source is conducted to the heat sink.

2. The apparatus of claim 1, wherein the heat further comprises a metallic film formed a surface thereof.

3. The apparatus of claim 2, wherein the metallic film is formed on the end portion of the heat sink facing the recess.

4. The apparatus of claim 2, wherein the light source is attached to the metallic film formed on the heat sink.

5. The apparatus of claim 1, wherein the light source comprises an LED.

6. The apparatus of claim 1, wherein the light source comprises a plurality of LEDs.

7. The apparatus of claim 1, further comprising a terminal board in communication with the light source.

8. The apparatus of claim 7, wherein the terminal board further comprises a metallic film formed a surface thereof.

9. The apparatus of claim 8, wherein the light source is electrically connected to the metallic film formed on the terminal board

10. The apparatus of claim 7, wherein the terminal board comprises a conductive pad formed on a surface thereof, and wherein electrical current is supplied to the light source through the terminal board via the conductive pad.

11. The apparatus of claim 7, wherein the terminal board comprises a plurality of conductive pads formed on a surface thereof.

12. The apparatus of claim 11, wherein the terminal board comprises three conductive pads spaced 120° apart.

13. The apparatus of claim 1, wherein the heat sink forms an electrical contact of the light source.

14. The apparatus of claim 1, wherein the light source is carried by the end portion of the heat sink.

15. The apparatus of claim 1, wherein the light source is configured to emit blue light forwardly toward a concave wall defined by the lens.

16. The apparatus of claim 1, wherein the lens has a rearward portion extending about the recess, and defining an outer surface that tapers in a direction toward the heat sink.

17. The apparatus of claim 1, wherein the recess is re-entrant into the lens, and the lens has a rearward wall that is concave toward the recess.

18. The apparatus of claim 1, wherein the recess contains at least one of the following:

i) U.V. curable optical plastic material having an index of refraction substantially the same as that of the lens; and

ii) light transmitting plastic material.

19. The apparatus of claim 1, wherein the light source is at the end portion of the heat sink that faces the recess, and in thermal communication with the end portion.

20. The apparatus of claim 1, wherein the lens and heat sink are coaxial.

21. The apparatus of claim 1, further comprising a holder into which the light entrance end of the lens is received, the holder extending about the recess.

22. The apparatus of claim 21, wherein the heat sink comprises a body that projects endwise into the holder.

23. The apparatus of claim 21, wherein the holder defines an inner wall that tapers in a direction toward the heat sink, the lens defining an outer surface that also tapers toward the heat sink and extends about the recess and in adjacent relation to the holder inner wall.

24. The apparatus of claim 21, further comprising wiring extending between the holder and the heat sink, to supply electrical current to the light source which comprises an LED, or an array of LEDs.

25. The apparatus of claim 21, wherein the lens, heat sink and holder are coaxial.

26. The apparatus of claim 21, further comprising a light transmitting member transmitting light from the lens, in a direction away from the recess.

27. The apparatus of claim 21, wherein the lens is a TIR lens.

28. The apparatus of claim 27, further comprising a housing extending about the heat sink in coaxial relation therewith, the holder having an end portion received into the housing.

29. The apparatus of claim 21, wherein the heat sink is a primary heat sink, and there being a secondary heat sink at an end of the primary heat sink opposite the recess.

30. A method of providing optical radiation, comprising:

providing a light source that emits light;

using a heat sink member to stabilize the temperature of the diode light source, the heat sink member having an end portion facing a recess;

transmitting light from the light source via the recess into a lens;

transmitting heat generated by the light source into the heat sink; and

delivering optical radiation through the lens having a light entrance end forming the recess.

31. A method of tooth whitening, comprising:

applying a tooth whitening material to a tooth;

allowing the tooth to be exposed to the material in the absence of activating light for a substantial period of time;

utilizing an array of diodes to produce activating light having a wavelength in the range 400-600 nm;

emitting the light forwardly toward a concave wall defined by a lens; and

applying the activating light to the material at a power level of 100-600 mW for a period of 20-40 seconds.

32. A method of curing a dental composite material, comprising:

applying a dental composite material to a tooth;

utilizing an array of diodes to produce activating light having a wavelength in the range 400-600 nm;

emitting the light forwardly toward a concave wall defined by a lens; and

applying the activating light to the dental material at a power level of 100-200 mW for a period of 2-5 seconds.

33. The method of claim 32, wherein applying a dental composite material to a tooth further comprises applying a resin to a tooth.